# MODIS TECHNICAL TEAM MEETING

## June 16, 1994

The MODIS Technical Team Meeting was chaired by Vince Salomonson. Present were Bruce Guenther, Janine Harrison, Steve Ungar, Chris Justice, Harry Montgomery, David Herring, Joann Harnden, Dick Weber, Wayne Esaias, Ken Anderson, Ed Masuoka, Bill Barnes, Al Fleig, and Yoram Kaufman.

### 1.0 SCHEDULE OF EVENTS

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| **June 15** | **533Q Financial Reports due to Teresa Mautino** |
| June 30 | MODIS Quarterly Management Review, held via live teleconference at GSFC building 23 from 11 a.m. to 5 p.m. |
| July 15 | Semi-Annual Reports due to Barbara Conboy |
| Sept. 20 - 22 | SDST Simulation Data Workshop, Flathead Lake, MT |
| Oct. 18 | Calibration Working Group, Greenbelt Marriott |
| Oct. 19 - 21 | MODIS Science Team Meeting, Greenbelt Marriott |

### 2.0 MINUTES OF THE MEETING

#### 2.1 Direct Broadcast

Barnes reported that he discussed direct downlink considerations with Ron Muller, of Code 170 (Mission to Planet Earth Office), who said that changes being considered for the common-buy spacecraft (PM-1 and later) would require downlink of 95 percent of the MODIS data in a 16-day period. Barnes said the Science Team wants to know the impact direct downlink will have on the instrument, but, according to Muller, there is no impact. Salomonson feels that there is a high probability that the X-band downlink approach (as opposed to TDRSS) will be used for the PM-1 platform and beyond because it appears that it saves money and may lead to some other simplifications on the platforms. There appears to be some questions about whether that approach will be used for AM-1.

Salomonson stated that the Team should also consider the subject of direct broadcast (e.g., transmitting data to field campaigns like the present NOAA High Resolution Picture Transmission, but at X-band which requires a more powerful Landsat-like capability). This is another item being considered for cost reduction in the EOS program. Although EOS AM-1 may not have direct continuous broadcast, it could be turned on by command. Direct broadcast may cause EMI (electromagnetic interference) effects with some instruments or it may compete with the X-band direct downlink mode. Salomonson asked Barnes to explore the implications of this consideration. Esaias would like to see an HRPT downlink

capability at S-band, which he feels would be possible if we limit the number of channels.

In summary, Salomonson stated that the issues still under consideration are downlinking via X-band and the importance of direct broadcast capability whether continuous, on command, or not at all. For downlinking, the satellite stores data and then, when it is in range of an appropriate ground station (presumably at high latitudes), transmits the data very rapidly in one burst. For the continuous broadcasts, data are only available when the satellite is within range of an appropriately configured X-band ground station.

**2.2 MODIS Project Reports**

Weber announced that SBRC finished the beryllium mainframe fit check on Monday. He circulated pictures of the mainframe. SBRC is scheduled to fit together all pieces of the engineering model (EM) over the next couple of weeks and will perform vibration tests in July with dummy masses inserted where protoflight model pieces will be inserted later.

Weber announced that Lee Tessmer is now SBRC's MODIS Project Manager. Tessmer is currently reviewing the MODIS replan proposal.

Weber reported that after tests, SBRC has determined that the radiative cooler works well.

There will be a MODIS Quarterly Management Review held via live teleconference in building 23 from 11 a.m. to 5 p.m., June 30.

**2.3 MCST Reports**

Guenther announced that there will be a briefing on data flow packetization next Thursday at 3 p.m. in Building 16, room 242. Discussion will focus on how the MODIS instrument creates packets through the Level 1A scan cube.

**2.4 EOSDIS System Reviewers Sought**

Salomonson asked Kaufman if he was asked by H.K. Ramapriyan to review the ECS (EOSDIS Core System). Kaufman responded affirmatively, yet said he declined because he feels there are others better suited to review the system. Ungar stated that he will be a reviewer representing both the Goddard DAAC and the MODIS Land Group.

Salomonson observed that EOSDIS would like to relax the requirement for 24-hour turnaround for data. At the upcoming review they may also discuss this item and other topics like the number of DAACs that are needed. Also, on-demand products may be discussed and where level 2 and 3 products should be produced. Salomonson reported that EOSDIS' cost models still say they can't afford to process all of the data from EOS AM-1 sensors so there may be a push to prioritize our products. Fleig interjected that EOSDIS should prioritize where

they allocate their funds. Currently, 80 percent of EOSDIS' funding goes toward personnel and 20 percent toward hardware.

**2.5 TEPA Requests Remote Sensing Information Exchange**

According to Ungar, two representatives from the Taiwan Environmental Protection Agency (TEPA) are visiting the United States and are interested in meeting with remote sensing scientists to discuss environmental applications. Ungar solicited interest and informed the Technical Team that TEPA has funds for remote sensing scientists to make reciprocal visits to Taiwan.

**2.6 SDST Reports**

Masuoka reported that the MODIS SDR (System Design Review) will be held June 27-29 at Goddard Space Flight Center, followed by a Data Processing Focus Team Meeting on June 30 at the University of Maryland. Anyone interested in copies of the documents for these meetings should request them from Debbie Critchfield of HAIS (Hughes Applied Information Systems). There may be a small copying fee as the documents are voluminous.

2.6.1 Browse Data

Masuoka stated that SDST will soon circulate a memo on browse data. Salomonson said there is interest in eliminating browse data. Fleig responded that that depends on how you define browse data—Level 3 may be considered browse for Level 2. Esaias added that we could reduce the resolution of Level 3 products and call them browse data.

2.6.2 Data Product Descriptions

Masuoka announced that SDST will soon complete its strawman document on data product descriptions and what inputs SDST will need to process them. That document is tentatively scheduled for release in October 1994.

2.6.3 Gridding

Masuoka said he discussed the issue with Wayne Esaias and determined that MOCEAN wants to use a SeaGrid approach as their gridding scheme.

Masuoka stated that there is a need to develop common grids for other data sets where there are requirements to use co-registered data from other instruments or the need to look at radiances for the same location over several days. Masuoka plans to email a strawman approach to gridding to the Team in July as a basis for further discussion by the Science Team on the approaches algorithm developers would like to take to global grids.

2.6.4 MODIS Brochure and WWW Home Page

Fleig stated that he and Herring met to discuss to discuss their plans for producing a MODIS Brochure. They hope to have a rough draft completed by July 1.

Herring later added that he plans to include much of the same information that appears in the brochure in the MODIS home page, now accessible via Mosaic on the WorldWide Web (WWW). The URL (Universal Resource Language) for the MODIS page is http://modarch.gsfc.nasa.gov/MODIS/modis.html. Herring noted that the MODIS page will be a work in progress for the next several months. He is soliciting ideas for information and ideas to include in the page.

2.6.5 Synthetic Data

Fleig reported that he received responses to the questionnaire he sent to the Science Team regarding synthetic data. He plans to review the comments before making a presentation on the subject; however, he said they will help him prepare for the System Design Review.

2.6.6 Programming in C++

Fleig reported that there is still no standard from EOS Project for using C++. If MODIS team members want to program in C++, and if the language is accepted by EOS Project, then SDST doesn't mind. However, C++ is currently not allowed by Project, Fleig noted, although they use it themselves. Esaias added that it will cost the team more money if it is not allowed to use C++.

**2.7 MOCEAN Reports**

Esaias announced that SeaWiFS is hosting a series of workshops on using SeaDAS (SeaWiFS Data Analysis System) software this July and August. He encouraged anyone interested in attending to respond to Dan Endres quickly because slots are going fast. Dan may be reached at (301) 286-3434, or email him at dlec@neptune.gsfc.nasa.gov.

**2.8 MODLAND Reports**

Justice asked the Calibration Team for a copy of their software for Thematic Mapper (TM) degradation in order to process TM data at MODIS resolutions. Ungar responded that the software is forthcoming.

He reported that ATBD reviews are due to arrive later this week.

**2.9 Atmosphere Group Reports**

Kaufman stated that the Atmosphere Group is preparing for the upcoming SCAR-C campaign, for which he plans to use the MODIS Airborne Simulator (MAS) with a 50-channel digitizer. If it isn't ready, then he will use the 12-channel digitizer.

**2.10 MAST Reports**

Harrison reported that MODIS has not received all of its promised funding for FY94—we are short $87K of SCI funds and $240K SCF. According to Harrison, SDST and MCST are most affected by the lack of funding. Harrison noted that the funding shortage seems to be due to bookkeeping error. Salomonson agreed to take this issue up with Michael King.

## 3.0 ACTION ITEMS

1. *Barnes:* At Salomonson's request, explore the possibility of EMI effects on MODIS data as a result of direct continuous broadcast.
2. *Salomonson*: Discuss the current MODIS funding shortage with Michael King.

### 3.1 Action Items Carried Forward

2. *Barker*: Forward information on MODIS' spectral bands to Hugh Kieffer. [In progress. A draft memo has been prepared by MCST and is being reviewed by SBRC. It is expected that the information will be sent to Kieffer as soon as possible.]
3. *Fleig & Herring*: Review the MODIS brochure and recommend changes / alternatives [Ongoing, will have first draft done by the end of June].
4. *Barnes*: Investigate the procedure for redesignation of channels for night data return (to Kaufman). [Barnes has determined that MODIS channels can be redesignated for night data return; however, this AI is still open.]
5. *Fleig and Ungar*: Interact with the group leaders prior to developing a MODIS data simulation plan for review at the next Science Team Meeting, due July 4.
6. *Masuoka*: Provide Gordon's Water Leaving Radiance software to ESDIS project as a test case for the utility of massively parallel processing after a beta delivery is received from the Oceans Team. [SDST is waiting for delivery of the Ocean Group's beta software.]

## 4.0 ATTACHMENTS

**NOTE: All attachments referenced below are maintained in MODARCH and are available for distribution upon request. Please contact David Herring, at (301) 286-9515, Code 921, NASA/Goddard Space Flight Center, Greenbelt, MD 20771 if you desire copies of any attachments.**

1. MODIS-related Field Campaign Schedules, by Steve Ungar

## 5.0 RECENT MODIS DOCUMENTS

**Note: All recent MODIS documents are maintained in MODARCH. If you would like access to or information about MODARCH, please contact the MODARCH System Administrator, Michael Heney, at (301) 286-4044 or via e-mail at mheney@ltpsun.gsfc.nasa.gov.**

1. Geolocation ATBD, by SDST. Due draft to SDST by June 15 with distribution to external reviewers July 15.